CLAIMS

What is claimed is:

1   1.   A network management system for discovering information about a network,

2   comprising:

3   plural discovery agents adapted to discover information concerning said network;

4   each of said discovery agents having an associated discovery capability;

5   each of said discovery agents having an associated discovery assignment; and

6   collectively, said agent discovery assignments being a subset of said agent discovery

7   capabilities.

1   2.   A system in accordance with Claim 1 wherein, collectively, said agent discovery

2   capabilities are overlapping and said agent discovery assignments are substantially non-

3   overlapping.

1   3.   A system in accordance with Claim 1 wherein said agent discovery assignments are

2   based on said discovery capabilities.

1   4.   A system in accordance with Claim 1 wherein said agent discovery assignments

2   reflect one or more of data collection service registrations with said agents, agent cost to

3   obtain network information, load balancing among said agents, and assignment churn.

1 5. A system in accordance with Claim 1 wherein said agent discovery assignments

2 comprise one or both of inband and outband discovery assignments.

1 6. A network management system for discovering information about a network,

2 comprising:

3 a network manager;

4 plural discovery agents connected to said network manager;

5 each of said discovery agents having an associated discovery capability to obtain

6 information concerning said network;

7 capability determining means for determining said agent discovery capabilities;

8 assignment computation means for computing agent discovery assignments for one or

9 more of said discovery agents based on said agent discovery capabilities; and

10 assignment implementing means for implementing said agent discovery assignments

11 at one or more of said discovery agents.

1 7. A system in accordance with Claim 6 wherein said network manager is not part of said

2 network.

1 8. A system in accordance with Claim 6 wherein one or more of said agents are

2 associated with nodes in said network.

1 9. A system in accordance with Claim 6 wherein said capability determining means

2 comprises first means in said network manager for requesting a capability poll, second means

3   in said agents for performing a capability query, and third means in said agents for providing

4   a capability poll response to said network manager.

1   10.   A system in accordance with Claim 10 wherein said assignment computation means is

2   adapted to generate said agent assignments based on one or more of data collection service

3   registrations between said network manager and said agents, agent cost to obtain network

4   information, load balancing among said agents, and assignment churn.

1   11.   In association with a data storage network having a plurality of managed hosts, a

2   plurality of storage devices, and a plurality of switching fabric nodes providing inband

3   interconnections between said managed hosts and said storage devices, a data storage network

4   management system for discovering information about said data storage network, comprising:

5   a network manager connected to said managed hosts via outband connections;

6   plural inband discovery agents operating on said managed hosts;

7   plural outband discovery agents operating on said network manager;

8   each of said discovery agents having an associated discovery capability to obtain

9   information concerning said data storage network;

10   agent capability determining logic in said discovery agents adapted to generate agent

11   capability information sets identifying said agent discovery capabilities, said agent capability

12   information sets being subsets of full agent discovery information sets obtainable by said

13   agents;

14   assignment computation logic in said network manager adapted to compute agent

15   discovery assignments for one or more of said discovery agents based on said agent discovery

16   capability information sets; and

17   assignment implementing logic in said one or more discovery agents for implementing

18   said agent discovery assignments.

1   12.   A method for obtaining intelligent discovery of network information in a network

2   using a plurality of network discovery agents having mutually nonexclusive discovery

3   capabilities, comprising:

4   determining said agent discovery capabilities;

5   computing agent assignments based on said agent discovery capabilities and a goal of

6   limiting network discovery poll overhead; and

7   implementing said agent assignments.

1   13.   A method in accordance with Claim 12 wherein said agent discovery capabilities are

2   determined by performing capability polls representing subsets of full network discovery

3   polls.

1   14.   A method in accordance with Claim 12 wherein said agent assignments are computed

2   based on consideration of one or more of data collection service registrations between said

3   network manager and said agents, agent cost to obtain network information, load balancing

4   among said agents, and assignment churn.

1 15. A method in accordance with Claim 12 wherein said agent assignments are

2 implemented by limiting the scope of agent discovery to a subset of said discovery

3 capabilities.

1 16. A network manager for managing a data storage network, comprising:

2   agent discovery capability determining logic adapted to determine discovery

3 capabilities of discovery agents in said data storage network;

4   assignment computation logic adapted to compute agent discovery assignments based

5 on said agent discovery capabilities;

6   discovery poll request logic adapted to request network discovery from said agents

7 according to said agent discovery assignments; and

8   discovery poll response logic adapted to process network discovery received from said

9 agents in response to said network discovery requests.

1 17. A network discovery agent for use in a data storage network, comprising:

2   discovery capability logic adapted to determine and provide agent discovery capability

3 information to a requestor, said agent discovery capability information being a subset of all

4 discovery information obtainable by said agent; and

5   discovery query logic adapted to implement discovery queries based on agent

6 discovery assignment information determined from said capability information.

1 18. A computer program product for obtaining discovery of network information from

2 plural information gathering agents, comprising:

3   one or more data storage media;

4   means recorded on said data storage media for programming a data processing

5   platform to operate as a network manager to perform intelligent network discovery in a data

6   storage network by:

7   determining discovery capabilities of said agents;

8   computing agent assignments based on said agent discovery capabilities;

9   requesting one or more of said agents to perform network discovery according to said

10 agent assignments; and

11   processing discovery information returned by said one or more agents.

1   19.   A computer program product in accordance with Claim 18 wherein said agent

2   discovery assignments are based on one or more of data collection service registrations

3   between said network manager and said agents, agent cost to obtain network information, load

4   balancing among said agents, and assignment churn.

1   20.   A computer program product for obtaining discovery of network information from

2   plural information gathering agents, comprising:

3   one or more data storage media;

4   means recorded on said data storage media for programming a managed host in a data

5   storage network to operate as an inband discovery agent or a network manager to operate as

6   an outband discovery agent that performs intelligent network discovery in conjunction with

7   other agents by:

8   providing agent discovery capability information to a requester;

9   receiving agent discovery assignments from said requester that are based on said

10   discovery capability information;

11   performing intelligent discovery according to said agent discovery assignments; and

12   providing intelligent discovery information received in response to said intelligent

13   discovery to said requester.